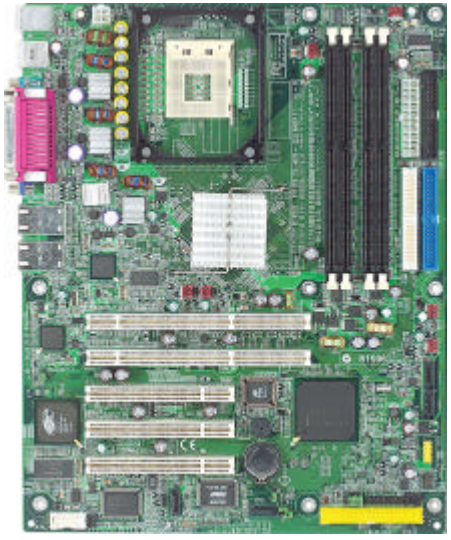
# E7210 Master-FARM

## MS-9149 (v1.X) ATX Server Board



**Version 1.0**
**G52-S9149X1**

Manual Rev: 1.0
Release Date: October 2003

CE N1996

## FCC-A Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

**Notice 1**

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Notice 2**

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

**VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.**

**Micro-Star International MS-9149**

FC **Tested to comply with FCC Standard**

**For Home or Office Use**



## Copyright Notice

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## Revision History

| Revision | Revision History | Date |
|---|---|---|
| V1.0 | First release for PCB 1.X | October 2003 |

## Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance.

- Visit the MSI website for FAQ, technical guide, BIOS updates, driver updates, and other information: **http://www.msi.com.tw/**
- Contact our technical staff at: **support@msi.com.tw**

## Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment has not work well or you can not get it work according to User's Manual.
    - The equipment has dropped and damaged.
    - The equipment has obvious sign of breakage.
12. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE $60^0$C ($140^0$F), IT MAY DAMAGE THE EQUIPMENT.

**CAUTION:** Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

**警告使用者:**
**這是甲類的資訊產品，在居住的環境中使用時，可能會造成無線電干擾，在這種情況下，使用者會被要求採取某些適當的對策。**



# CONTENTS


FCC-A Radio Frequency Interference Statement ..... ii
Copyright Notice ..... iii
Trademarks ..... iii
Revision History ..... iii
Technical Support ..... iii
Safety Instructions ..... iv
**Chapter 1. Getting Started ..... 1-1**
Mainboard Specifications ..... 1-2
Mainboard Layout ..... 1-5
MSI Special Features ..... 1-6
PC Alert™ III ..... 1-6
**Chapter 2. Hardware Setup ..... 2-1**
Quick Components Guide ..... 2-2
Central Processing Unit: CPU ..... 2-3
CPU Core Speed Derivation Procedure ..... 2-3
CPU Installation Procedures for Socket 478 ..... 2-4
Installing the CPU Fan ..... 2-5
Memory ..... 2-7
Memory Speed/CPU FSB Support Matrix ..... 2-7
DIMM Module Combination ..... 2-7
Installing DDR Modules ..... 2-8
Power Supply ..... 2-9
ATX 20-pin Power Connector: JPWR2 ..... 2-9
ATX 12V Power Connector: JPWR1 ..... 2-9
Back Panel ..... 2-10
Connectors, Jumpers & Slots ..... 2-11
Floppy Disk Drive Connector: JFDD1 ..... 2-11
Hard Disk Connectors: IDE1/2 ..... 2-11
SATA Connectors Supported by ICH-HR: SATA1 & SATA2 ..... 2-12

Hard Disk RAID Connectors Supported by Promise PDC20378: IDE3, SATA3 & SATA4 (Optional) ..... 2-12
Fan Power Connectors: CPUFAN1, SYSFAN1/2/3/4/5 ..... 2-13
LCD Panel Connector: JLCD1 (Optional) ..... 2-14
I2C Bus Connector: JIPMB1 ..... 2-14
82547 GI LAN Active LED Connector: JACT1 (Optional) ..... 2-14
82541 GI LAN Active LED Connector: JACT2 (Optional) ..... 2-14
Front Panel Connector: JFP1 ..... 2-15
Front USB Connector: JUSB2 ..... 2-15
Chassis Intrusion Switch Connector: JCI1 ..... 2-16
ISA Bridge Control Connector: JISA1 ..... 2-16
Enable/Disable PROMISE SATA Header: J2 ..... 2-16
PCI-X Devices Header: J4 ..... 2-16
PCI-X Bus Speed Header: J5 ..... 2-17
FWH Write Protect Connector: J9 ..... 2-17
ID Header for BIOS Version: J10 & J11 ..... 2-17
Enable/Disable VGA Jumper: J8 ..... 2-17
Enable/Disable 82541 EI LAN Jumper: J1 ..... 2-18
Clear CMOS Jumper: JBAT1 ..... 2-18
System Configure Jumper: J3 ..... 2-19
PCI (Peripheral Component Interconnect) Slots ..... 2-19
PCI Interrupt Request Routing ..... 2-20
**Chapter 3. BIOS Setup ..... 3-1**
Entering Setup ..... 3-2
Control Keys ..... 3-2
Getting Help ..... 3-3
The Main Menu ..... 3-4
Standard CMOS Features ..... 3-6
IPMI V1.5 BIOS Features ..... 3-8



Advanced BIOS Features ..... 3-10
Advanced Chipset Features ..... 3-15
Integrated Peripherals ..... 3-17
Power Management Setup ..... 3-22
PnP/PCI Configurations ..... 3-24
PC Health Status ..... 3-26
Frequency/Voltage Control ..... 3-27
Load Fail-Safe/Optimized Defaults ..... 3-28
Set Supervisor/User Password ..... 3-29

# 1

# *Getting Started*

Thank you for choosing the E7210 Master-FARM (MS-9149 v1.X) ATX server board. The E7210 Master-FARM is a superior computer mainboard based on **Intel® Canterwood-ES** & **Hance Rapids** chipsets for optimal system efficiency. Designed to fit the advanced Intel® P4 (Northwood/Prescott) processor, this mainboard provides a cost-effective and professional solution for high-end workstation and server markets.

# Mainboard Specifications

**CPU**
- Supports Intel® P4 (Northwood/Prescott) processors
- Supports 533/800MHz FSB
- Meets thermal requirements
- Onboard voltage regulator module

**Chipset**
- Intel® Canterwood-ES + Hance Rapids
- LPC Super I/O controller with floppy write protect function
- 4Mbit Flash EEPROM

**Main Memory**
- Supports 4GB ECC memory
- 4 DDR DIMM sockets
- Supports PC3200 ECC, unbuffered

**Onboard VGA**
- ATI Rage XL with 8MB SDRAM

**Onboard LAN**
- Onboard dual Intel Gigabit LAN
- Intel 82547GI Gigabit LAN
- Intel 82541GI Gigabit LAN
- Programmed Ethernet MAC address and EEPROM

**MSI Server Management: (Optional)**
- mBMC and MSI iConsole support IPMI 1.5

**Slots**
- 3 x PCI 32bit/33MHz slots
- 2 x PCI 64bit/66MHz slots

**Onboard IDE**
- 2 x IDE connector to support ATA 100/66/33
- 1 x IDE RAID connector for 0, 1 and 0+1 support (optional: Promise 20378 RAID controller)

**Onboard S-ATA**
- 4 x S-ATA, 2 from south bridge, 2 from Promise controller (optional: Promise 20378 RAID controller)
- RAID 0, 1 support

**Onboard I/O**
- On-Board Peripherals include:
  - 1 x PS/2 Keyboard/Mouse Port
  - 1 x floppy port
  - 2 x serial ports
  - 1 x parallel port
  - 2 x USB2.0 ports (rear)
  - 2 x USB 2.0 ports (front)
  - 2 x RJ-45

**BIOS**
- PCI 2.2 compliant, VPD and DMI
- PnP 1.0A, SMBIOS 2.3, ACPI 2.0
- Supports PXE boot protocol
- APM 1.2
- WOL
- WOR
- USB keyboard and mouse
- PC 2001 system design compliant
- BIOS Flash Write Protect
- BBS
- Event Log
- USB Legacy Support KB & Mouse
- Chassis Intrusion
- Console Redirection
- AC Recovery (back to original status)
- RTC alarm and wake up
- Boot Block
- Remote Diag.

**Power Management Features**

- RTC alarm and wake up
- Wake up on LAN (WOL)
- Wake up on serial ring
- Wake up on Keyboard/Mouse from S1
- Wake up on USB from S1
- Wake up on PCI
- Supports ACPI S1/S4/S5 functions

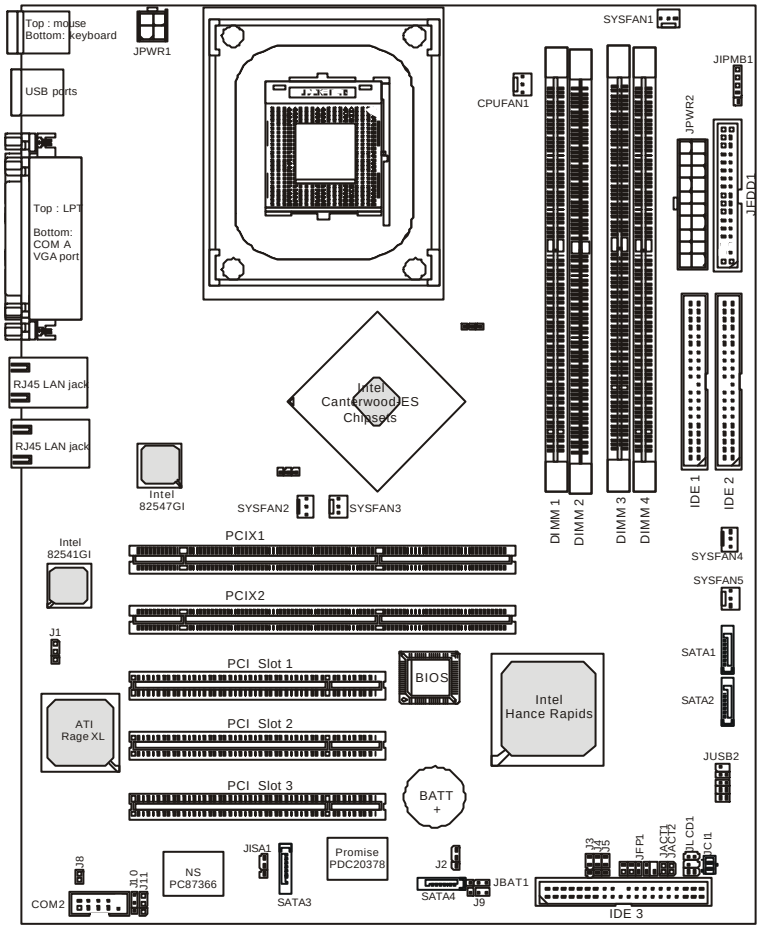
**Regulatory**

- FCC Class B
- EMC
- CE

**Board Size**

- ATX compatible form factor with 9 mounting holes

# Mainboard Layout




**E7210 Master-FARM (MS-9149 v1.X) ATX Server Board**

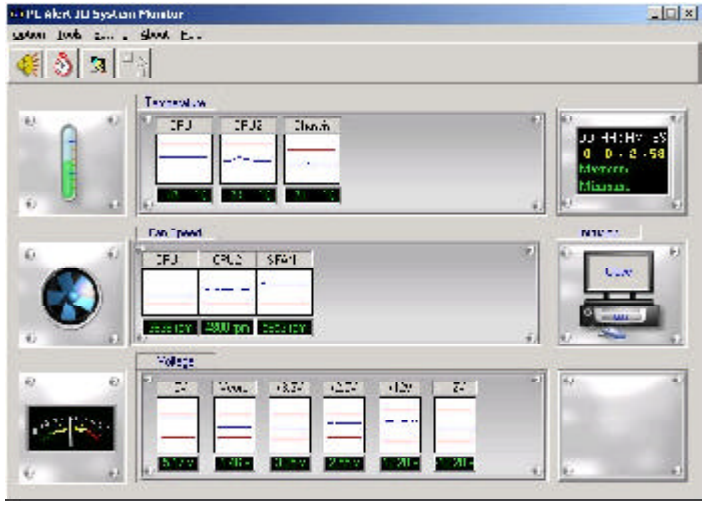
# MSI Special Features

## PC Alert™ III

The PC Alert™ III is a utility you can find in the CD-ROM disk. The utility is just like your PC doctor that can detect the following PC hardware status during real time operation:

- ✦ monitor CPU & system temperatures
- ✦ monitor fan speed(s)
- ✦ monitor system voltage
- ✦ monitor chassis intrusion

If one of the items above is abnormal, the program main screen will be immediately shown on the screen, with the abnormal item highlighted in red. This will continue to be shown until user disables the warning.



**MSI Reminds You...**

*1. Items shown on PC Alert™ III vary depending on your system status.*

*2. This feature is only available for MS-9149 mainboard without mBMC chipset.*

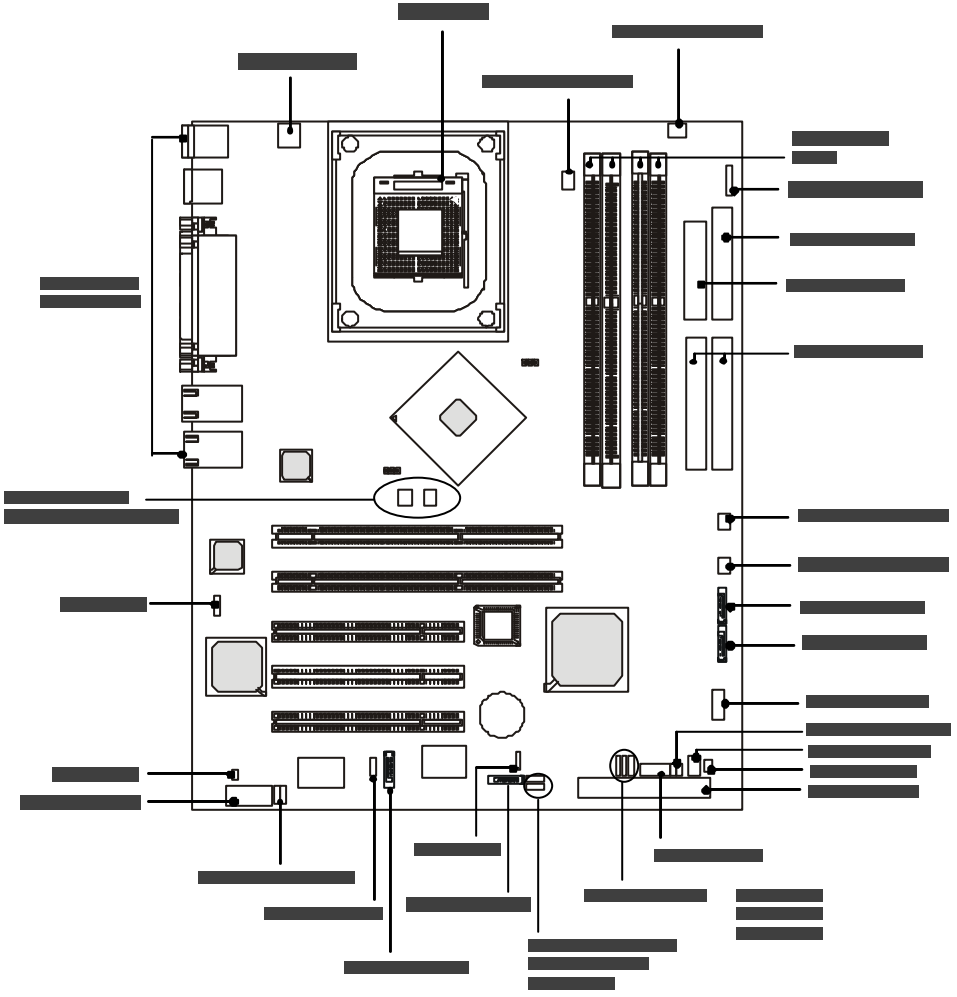
2

# *Hardware Setup*

This chapter provides you with the information about hardware setup procedures. While doing the installation, be careful in holding the components and follow the installation procedures. For some components, if you install in the wrong orientation, the components will not work properly.

Use a grounded wrist strap before handling computer components. Static electricity may damage the components.

# Quick Components Guide



# Central Processing Unit: CPU

The mainboard supports Intel® Pentium® 4 Northwood / Prescott processor in the 478 pin package. The mainboard uses a CPU socket called PGA478 for easy CPU installation. When you are installing the CPU, **make sure the CPU has a heatsink and a cooling fan attached on the top to prevent overheating.** If you do not find the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

## CPU Core Speed Derivation Procedure

| | | | |
|---|---|---|---|
| **If** | CPU Clock | = | 100MHz |
| | Core/Bus ratio | = | 17 |
| **then** | CPU core speed | = | Host Clock x Core/Bus ratio |
| | | = | 100MHz x 17 |
| | | = | 1.7 GHz |

**MSI Reminds You...**

***Overheating***

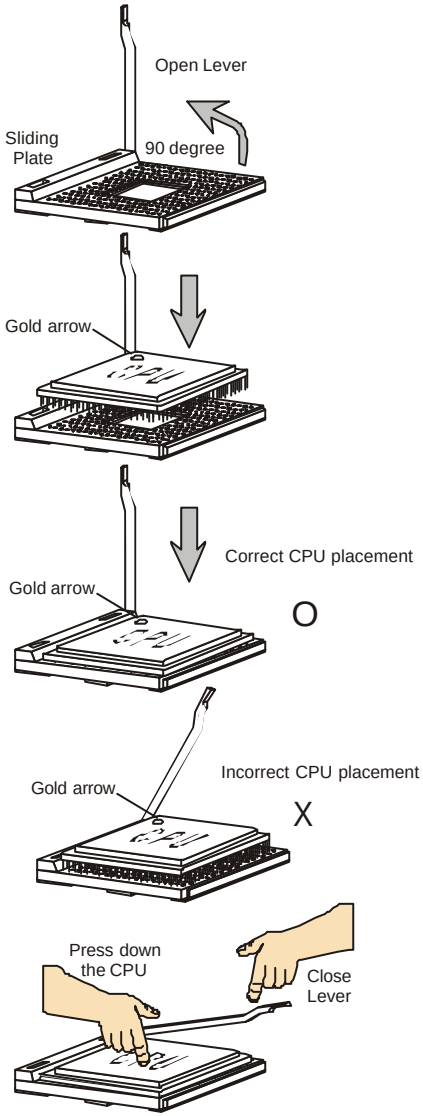
*Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.*

***Replacing the CPU***

*While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from grounded outlet first to ensure the safety of CPU.*

## CPU Installation Procedures for Socket 478

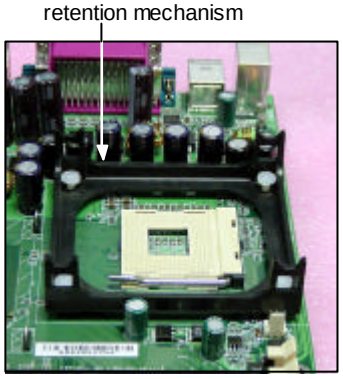
1. Please turn off the power and unplug the power cord before installing the CPU.
2. Pull the lever sideways away from the socket. Make sure to raise the lever up to a 90-degree angle.
3. Look for the gold arrow. The gold arrow should point towards the lever pivot. The CPU can only fit in the correct orientation.
4. If the CPU is correctly installed, the pins should be completely embedded into the socket and can not be seen. Please note that any violation of the correct installation procedures may cause permanent damages to your mainboard.
5. Press the CPU down firmly into the socket and close the lever. As the CPU is likely to move while the lever is being closed, always close the lever with your fingers pressing tightly on top of the CPU to make sure the CPU is properly and completely embedded into the socket.



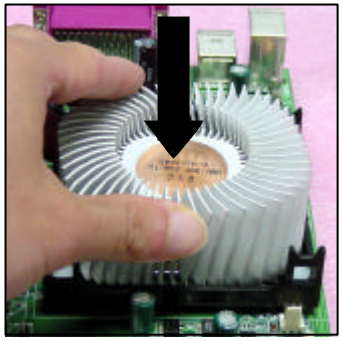

## Installing the CPU Fan

As processor technology pushes to faster speeds and higher performance, thermal management becomes increasingly important. To dissipate heat, you need to attach the CPU cooling fan and heatsink on top of the CPU. Follow the instructions below to install the Heatsink/Fan:

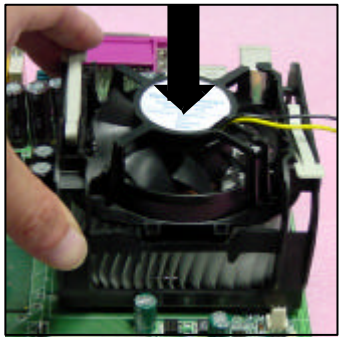
1. Locate the CPU and its retention mechanism on the motherboard.



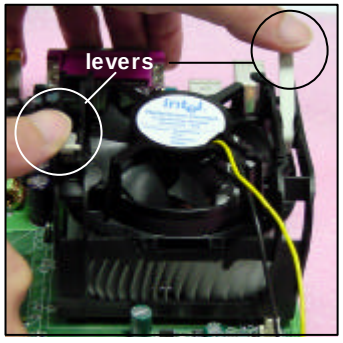

2. Position the heatsink onto the retention mechanism.



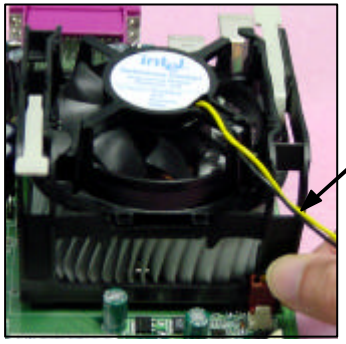
3. Mount the fan on top of the heatsink. Press down the fan until its four clips get wedged in the holes of the retention mechanism.



4. Press the two levers down to fasten the fan. Each lever can be pressed down in only ONE direction.



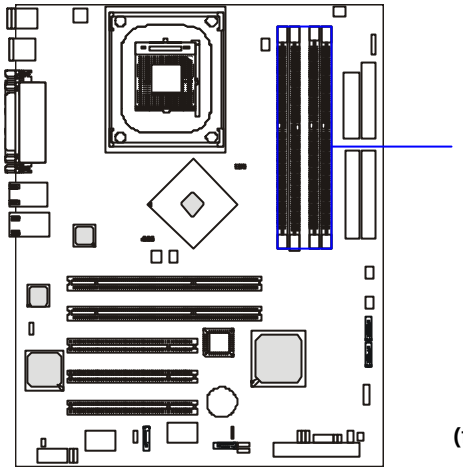
5. Connect the fan power cable from the mounted fan to the 3-pin fan power connector on the board.



***NOTES***

# Memory

The mainboard provides four 184-pin ECC non-registered DDR266/ DDR333/DDR400 SDRAM with the maximum memory size up to 4GB. To operate properly, install at least one memory module on the slot. To achieve the optimal efficiency of dual channel, install memory modules on Channel A (DIMM 1 & 2) and Channel B (DIMM 3 & 4). Make sure that you install memory modules of the same type and density on the same channel.



**DIMM1 ~ DIMM4 (from left to right)**

## Memory Speed/CPU FSB Support Matrix

| Memory / CPU FSB | DDR 266 | DDR333 | DDR400 |
|---|---|---|---|
| 533MHz | Yes | Yes | Yes |
| 800MHz | Yes | Yes | Yes |

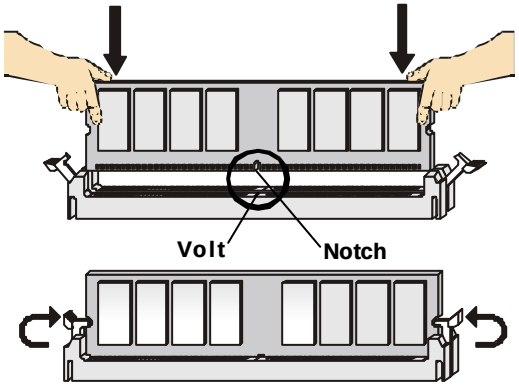
## DIMM Module Combination

The memory modules can be installed in the following combination:

| DIMM1 | DIMM2 | DIMM3 | DIMM4 | Total Memory |
|---|---|---|---|---|
| 128MB~1GB | | | | 128MB~1GB |
| | 128MB~1GB | | | 128MB~1GB |
| | | 128MB~1GB | | 128MB~1GB |
| | | | 128MB~1GB | 128MB~1GB |
| 128MB~1GB | 128MB~1GB | | | 256MB~2GB |
| 128MB~1GB | | 128MB~1GB | | 256MB~2GB |
| 128MB~1GB | | | 128MB~1GB | 256MB~2GB |
| | 128MB~1GB | 128MB~1GB | | 256MB~2GB |
| | 128MB~1GB | | 128MB~1GB | 256MB~2GB |
| | | 128MB~1GB | 128MB~1GB | 256MB~2GB |
| 128MB~1GB | 128MB~1GB | 128MB~1GB | | 384MB~3GB |
| 128MB~1GB | 128MB~1GB | | 128MB~1GB | 384MB~3GB |
| 128MB~1GB | | 128MB~1GB | 128MB~1GB | 384MB~3GB |
| | 128MB~1GB | 128MB~1GB | 128MB~1GB | 384MB~3GB |
| 128MB~1GB | 128MB~1GB | 128MB~1GB | 128MB~1GB | 512MB~4GB |

## Installing DDR Modules

1. The DDR DIMM has only one notch on the center of module. The module will only fit in the right orientation.
2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the socket.
3. The plastic clip at each side of the DIMM slot will automatically close.




**MSI Reminds You...**

*You can barely see the golden finger if the module is properly inserted in the socket.*

# Power Supply

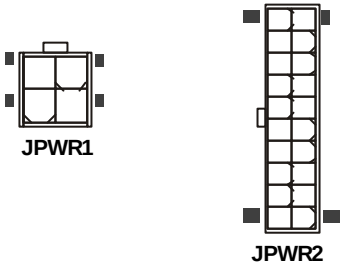
The mainboard supports SSI power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

## ATX 20-Pin Power Connector: JPWR2

This connector allows you to connect to an ATX power supply. To connect to the ATX power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.

## ATX 12V Power Connector: JPWR1

This 12V power connector is used to provide power to the CPU.



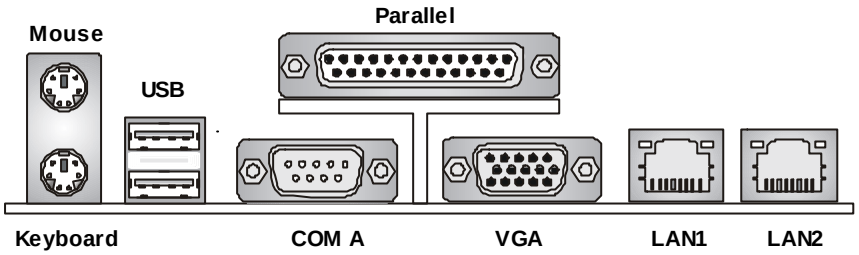

JPWR1 Pin Definition

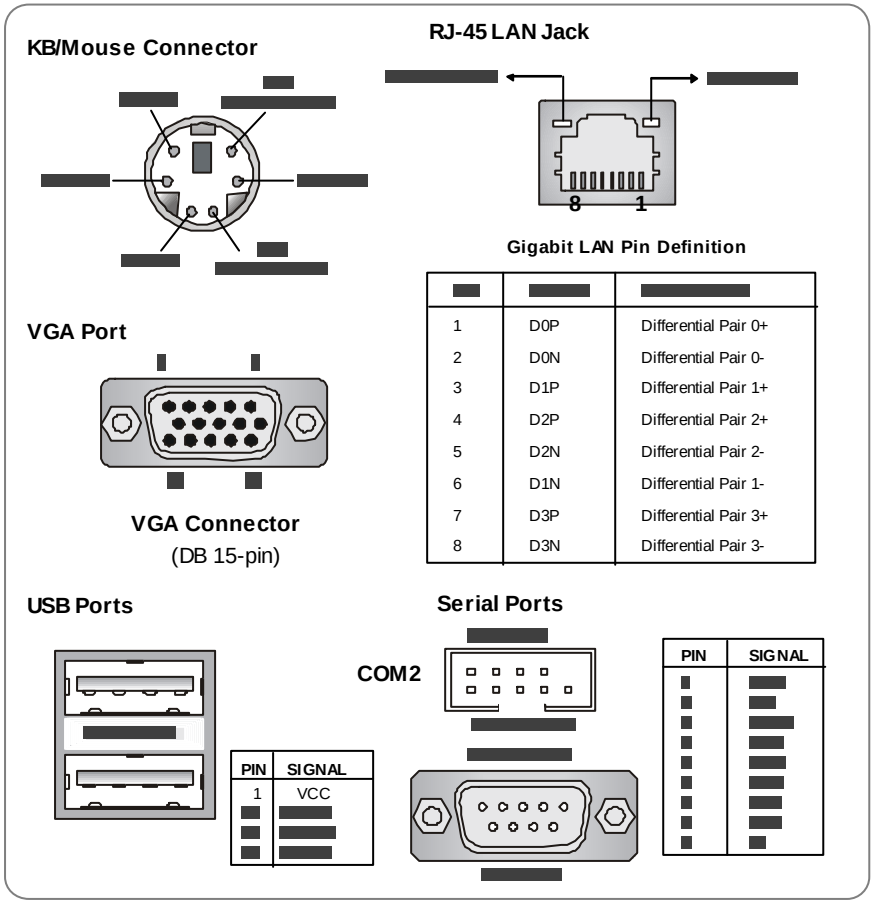
| PIN | SIGNAL |
|---|---|
| 1 | GND |
| 2 | GND |
| 3 | 12V |
| 4 | 12V |

JPWR2 Pin Definition

| PIN | SIGNAL | PIN | SIGNAL |
|---|---|---|---|
| 1 | 3.3V | 11 | 3.3V |
| 2 | 3.3V | 12 | -12V |
| 3 | GND | 13 | GND |
| 4 | 5V | 14 | PS_ON |
| 5 | GND | 15 | GND |
| 6 | 5V | 16 | GND |
| 7 | GND | 17 | GND |
| 8 | PW_OK | 18 | -5V |
| 9 | 5V_SB | 19 | 5V |
| 10 | 12V | 20 | 5V |

# Back Panel




| | | |
|---|---|---|
| 1 | D0P | Differential Pair 0+ |
| 2 | D0N | Differential Pair 0- |
| 3 | D1P | Differential Pair 1+ |
| 4 | D2P | Differential Pair 2+ |
| 5 | D2N | Differential Pair 2- |
| 6 | D1N | Differential Pair 1- |
| 7 | D3P | Differential Pair 3+ |
| 8 | D3N | Differential Pair 3- |



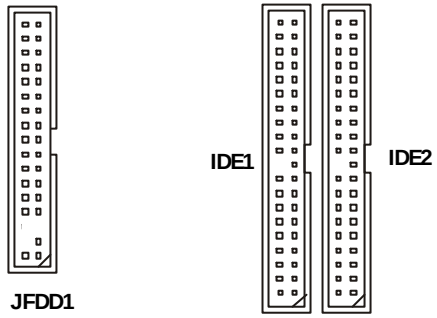
# Connectors, Jumpers & Slots

## Floppy Disk Drive Connector: JFDD1

The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.

## Hard Disk Connectors: IDE1/2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 33/66/100 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA 33/66/100 function. You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices. These connectors support the provided IDE hard disk cable.




**IDE1** (Primary IDE Connector)

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

**IDE2** (Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

**MSI Reminds You...**

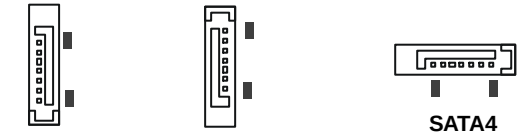
*If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.*

## SATA Connectors Supported by ICH-HR: SATA1 & SATA2 Hard Disk RAID Connectors Supported by Promise PDC20378: IDE3, SATA3 & SATA4 (Optional)

The Promise 20378 chipset supports one IDE RAID connector (IDE3) and two SATA connectors (SATA3 & SATA4). The ICH-HR chipset supports two serial IDE connectors (SATA1 & SATA2).

IDE3 is a 32-bit Enhanced PCI IDE and Ultra DMA 66/100/133 controller that provides PIO mode 0~5, Bus Master, and Ultra DMA 66/100/133 function. You can connect up to 2 hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices.

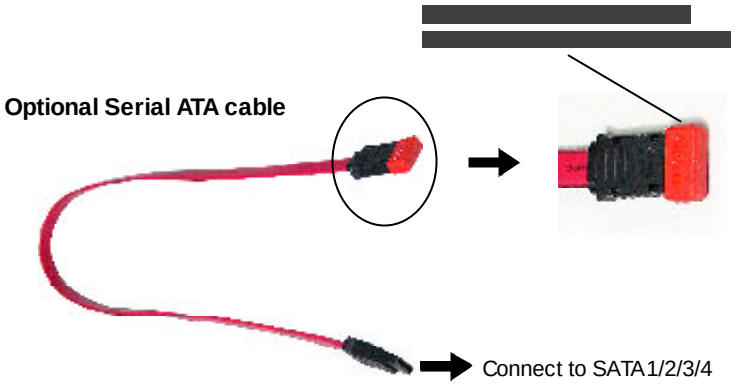
SATA connectors are dual high-speed Serial ATA interface ports. Each supports 1st generation serial ATA data rates of 150 MB/s. All connectors are fully compliant with Serial ATA 1.0 specifications. Each Serial ATA connector can connect to 1 hard disk device. Please refer to *Serial ATA/Serial ATA RAID* manual for detailed software installation procedures.




SATA Pin Definitions

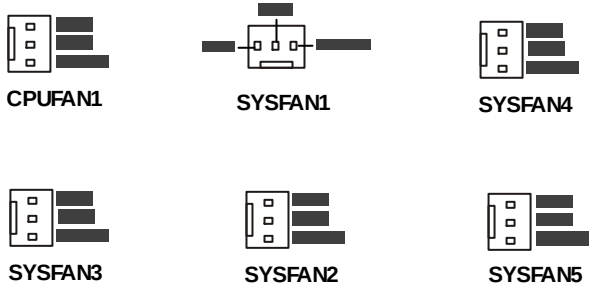
| PIN | SIGNAL | PIN | SIGNAL |
|---|---|---|---|
| 1 | GND | 2 | TXP |
| 3 | TXN | 4 | GND |
| 5 | RXN | 6 | RXP |
| 7 | GND | | |

**MSI Reminds You...**
*Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, the loss of data may occur during transmission.*




## Fan Power Connectors: CPUFAN1, SYSFAN1/2/3/4/5

The CPUFAN1 (processor fan) and SYSFAN1/2/3/4/5 (system fans) support system cooling fan with +12V. It supports three-pin head connector. When connecting the wire to the connectors, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.




**MSI Reminds You...**
*Always consult the vendors for proper CPU cooling fan.*

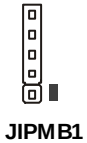
## LCD Panel Connector: JLCD1 (Optional)

The connector is additionally provided for connection to a LCD panel, which shows information on the panel for you to identify the current status or mode of the connected system.

| PIN | SIGNAL |
|---|---|
| 1 | SOUT |
| 2 | SIN |
| 3 | NC |
| 4 | GND1 |
| 5 | GND0 |
| 6 | VCC |

## I2C Bus Connector: JIPMB1 (Optional)

The mainboard provides one I2C (also known as I²C) Bus connector for users to connect to System Management Bus (SMBus) interface.




JIPMB1 Pin Definition

| PIN | SIGNAL |
|---|---|
| 1 | SMBCLK |
| 2 | SMBDATA |
| 3 | SMBALERT# |
| 4 | GND |
| 5 | VCC3 |

## 82547 GI LAN Active LED Connector: JACT1 (Optional)

## 82541 GI LAN Active LED Connector: JACT2 (Optional)

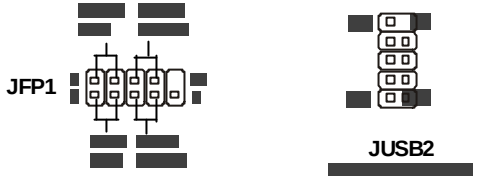
The LAN LED connectors are used to connect to LAN LEDs, which show the activity of the LAN. JACT1 is for LAN1 jack and the JACT2 is for LAN2 jack. Both LAN1 & LAN2 jacks are located on the back panel.

## Front Panel Connector: JFP1

The mainboard provides one front panel connector for electrical connection to the front panel switches and LEDs. JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.

## Front USB Connector: JUSB2

The mainboard provides one USB 2.0 pin header *JUSB2* that is compliant with Intel® I/O Connectivity Design Guide. USB 2.0 technology increases data transfer rate up to a maximum throughput of 480Mbps, which is 40 times faster than USB1.1, and is ideal for connecting high-speed USB interface peripherals such as **USB HDD**, **digital cameras**, **MP3 players**, **printers**, **modems and the like**.




JUSB2 Pin Definition

| PIN | SIGNAL | PIN | SIGNAL |
|---|---|---|---|
| 1 | VCC | 2 | VCC |
| 3 | USB0- | 4 | USB1- |
| 5 | USB0+ | 6 | USB1+ |
| 7 | GND | 8 | GND |
| 9 | Key | 10 | NC |

JFP1 Pin Definition

| PIN | SIGNAL | DESCRIPTION |
|---|---|---|
| 1 | HD_LED_P | Hard disk LED pull-up |
| 2 | FP PWR/SLP | MSG LED pull-up |
| 3 | HD_LED_N | Hard disk active LED |
| 4 | FP PWR/SLP | MSG LED pull-up |
| 5 | RST_SW_N | Reset Switch low reference pull-down to GND |
| 6 | PWR_SW_P | Power Switch high reference pull-up |
| 7 | RST_SW_P | Reset Switch high reference pull-up |
| 8 | PWR_SW_N | Power Switch low reference pull-down to GND |
| 9 | RSVD_DNU | Reserved. Do not use. |

## Chassis Intrusion Switch Connector: JCI1

This connector is connected to a 2-pin chassis switch. If the chassis is opened, the switch will be short. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.

JCI1

## ISA Bridge Control Connector: JISA1 (Optional)

JISA1

## Enable/Disable PROMISE SATA Header: J2

J2

Enable SATA IDSEL (default)

Disable SATA IDSEL

## PCI-X Devices Header: J4

J4

PCI-X Device (default)

Not PCI-X Device

## PCI-X Bus Speed Header: J5

J5

PCI-X Bus Speed is 66MHz (default)

PCI-X Bus Speed is 33MHz

## FWH Write Protect Connector: J9

J9

Enable FWH Write Protect

Disable FWH Write Protect (default)

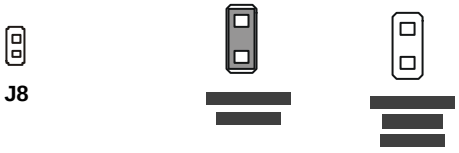
## ID Header for BIOS Version: J10 & J11

J10

J11

## Enable/Disable VGA Jumper: J8

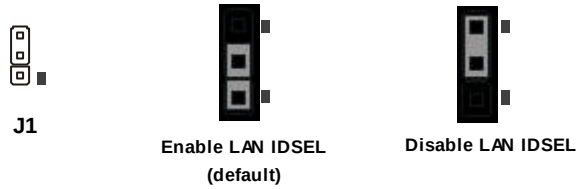
This jumper is used to enable or disable VGA IDSEL.



J8

## Enable/Disable 82541 GI LAN Jumper: J1

The LAN controller integrated on the motherboard varies depending on the model you have purchased. The default factory settings are properly configured for optimal system performance and thus should be left unchanged.




## Clear CMOS Jumper: JBAT1

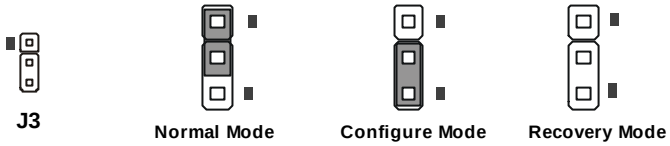
There is a CMOS RAM on board that has a power supply from external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, use the JBAT1 (Clear CMOS Jumper ) to clear data. Follow the instructions below to clear the data:

**MSI Reminds You...**

*You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.*

## System Configure Jumper: J3

The J3 jumper determines which mode the system will enter while powered on. During *Normal Mode*, the system will enter the assigned OS as usual. During *Configure Mode*, the system will directly enter BIOS setup utility. This enables you to modify the BIOS configurations. During *Recovery Mode*, you have to insert certain boot disk into the floppy drive before powering on the system. After powered on, the system will read the boot disk and enter DOS. This enables you to update the BIOS with a Flash utility if necessary.




The motherboard provides two PCI-X 64bit/66MHz and three PCI 32bit/33MHz slots.

## PCI Slots

Five PCI slots allow you to insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration. Three PCI slots are conventional 32-bit PCI bus slots and the other two are 64-bit PCI bus (also called *PCIX*) slots.

**32-bit PCI bus**: The bus has 32 data lines and runs at 33MHz.

**64-bit PCI bus**: The bus has 64 data lines and runs at 33, 66MHz. With twice data lines and much faster PCI clock, the 64-bit PCI bus increases the throughput and overall system performance.

## PCI Interrupt Request Routing

The IRQ, abbreviation of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins aretypically connected to the PCI bus INT A# ~ INT D# pins as follows:

**PCI-32 IRQ Routing (for ICH-HR)**

| PCI Device | INT A | INT B | INT C | INT D |
|---|---|---|---|---|
| PCI32 Slot1 | PIRQ#A | PIRQ#B | PIRQ#C | PIRQ#D |
| PCI32 Slot2 | PIRQ#B | PIRQ#C | PIRQ#D | PIRQ#A |
| PCI32 Slot3 | PIRQ#C | PIRQ#D | PIRQ#A | PIRQ#B |
| VGA | PIRQ#G | | | |
| 82541 GI LAN | PIRQ#H | | | |
| PDC20378 | PIRQ#E | | | |

Primary IDE Interrupt: IRQ14 (for ICH-HR)
Secondary IDE Interrupt: IRQ15 (for ICH-HR)

**PCIX-64 IRQ Routing (for ICH-HR)**

| PCI Device | INT A | INT B | INT C | INT D |
|---|---|---|---|---|
| PCIX-64 Slot1 | PX_IRQ#0 | PX_IRQ#1 | PX_IRQ#2 | PX_IRQ#3 |
| PCIX-64 Slot2 | PX_IRQ#1 | PX_IRQ#2 | PX_IRQ#3 | PX_IRQ#0 |

**CSA Interface IRQ routing (for Canterwood-ES)**

| PCI Device | INT A | INT B | INT C | INT D |
|---|---|---|---|---|
| 82547 GI LAN | PIRQ#F | | | |

3

# *BIOS Setup*

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use. You may need to run the Setup program when:

- An error message appears on the screen during the system booting up, and requests you to run SETUP.
- You want to change the default settings for customized features.

# Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <DEL> key to enter Setup.

```
Press DEL to enter SETUP
```

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

## Control Keys

| | |
|---|---|
| <↑> | Move to the previous item |
| <↓> | Move to the next item |
| <←> | Move to the item in the left hand |
| <→> | Move to the item in the right hand |
| <Enter> | Select the item |
| <Esc> | Jumps to the Exit menu or returns to the main menu from a submenu |
| <+/PU> | Increase the numeric value or make changes |
| <-/PD> | Decrease the numeric value or make changes |
| <F1> | General help, only for Status Page Setup Menu and Option Page Setup Menu |
| <F5> | Restore the previous CMOS value from CMOS, only for Option Page Setup Menu |
| <F6> | Load the default CMOS value from Fail-Safe default table, only for Option Page Setup Menu |
| <F7> | Load Optimized defaults |
| <F10> | Save all the CMOS changes and exit |

## Getting Help

After entering the Setup menu, the first menu you will see is the Main Menu.

### Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys ( ↑↓ ) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

### Sub-Menu

If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys ( ↑↓ ) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc >.

### General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

**NOTE**

*The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.*

# The Main Menu

Once you enter Phoenix-Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu displays twelve configurable functions and two exit choices. Use arrow keys to move among the items and press <Enter> to enter the sub-menu.

**Standard CMOS Features**
Use this menu for basic system configurations, such as time, date etc.

**IPMI V1.5 BIOS Features *(for mainboards with mBMC chip)***
Use this menu to configure the Platform Event Filter (PEF) status and WatchDog TimeOut features.

**Advanced BIOS Features**
Use this menu to configure the special enhanced features.

**Advanced Chipset Features**
Use this menu to change the values in the chipset registers and optimize your system's performance.

**Integrated Peripherals**
Use this menu to specify your settings for integrated peripherals.

**Power Management Setup**
Use this menu to specify your settings for power management.

**PnP/PCI Configurations**
This entry appears if your system supports PnP/PCI.

**PC Health Status (for mainboard without mBMC chip)**
This entry shows your PC health status.

**Frequency/Voltage Control**
Use this menu to specify your settings for frequency/voltage control.

**Load Fail-Safe Defaults**
Use this menu to load the BIOS default values for minimal but stable system performance.

**Load Optimized Defaults**
Use this menu to load the BIOS default values that are factory settings for optimal system operations.

**Set Supervisor/User Password**
Use this menu to set user and supervisor passwords.

**Save & Exit Setup**
Save changes to CMOS and exit setup.

**Exit Without Saving**
Abandon all changes and exit setup.

# Standard CMOS Features

The items inside Standard CMOS Features menu are divided into 10 categories. Each category includes none, one or more setup items. Use the arrow keys to highlight the item you want to modify and use the <PgUp> or <PgDn> keys to switch to the value you prefer.

**Date (mm:dd:yy)**
This allows you to set the system to the date that you want (usually the current date). The format is <day><month> <date> <year>.

| | |
|---|---|
| **day** | Day of the week, from Sun to Sat, determined by BIOS. Read-only. |
| **month** | The month from Jan. through Dec. |
| **date** | The date from 1 to 31 can be keyed by numeric function keys. |
| **year** | The year can be adjusted by users. |

**Time (hh:mm:ss)**
This allows you to set the system time that you want (usually the current time). The time format is <hour> <minute> <second>.

**IDE Primary/Secondary Master/Slave**
Press PgUp/<+> or PgDn/<-> to select *Manual*, *None*, *Auto* type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use *Manual* to define your own drive type manually.

If you select *Manual*, related information is asked to be entered to the following items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is SCSI, the selection shall be "*None*". If the controller of HDD interface is CD-ROM, the selection shall be "*None*".

| | |
|---|---|
| **Access Mode** | The settings are *CHS*, *LBA*, *Large*, *Auto*. |
| **Capacity** | The formatted size of the storage device. |
| **Cylinder** | Number of cylinders. |
| **Head** | Number of heads. |
| **Precomp** | Write precompensation. |
| **Landing Zone** | Cylinder location of the landing zone. |
| **Sector** | Number of sectors. |

**Drive A/B**
This item allows you to set the type of floppy drives installed. Available options are *None*, *360K, 5.25 in.*, *1.2M, 5.25 in.*, *720K*, 3.5 in., *1.44M, 3.5 in.*, *2.88M, 3.5 in*.

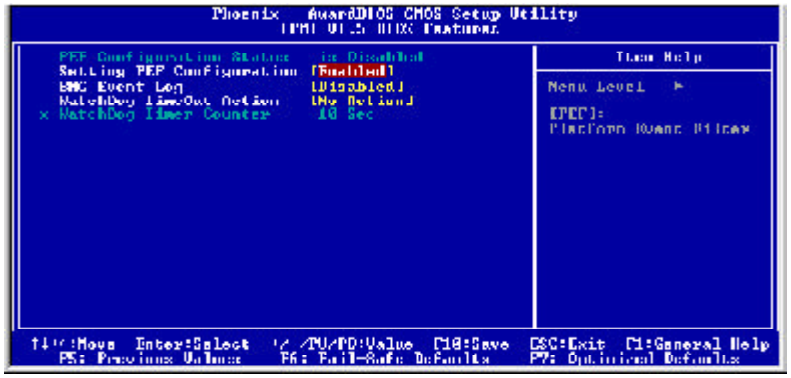
**Halt On**
The setting determines whether the system will stop if an error is detected at boot. Available options are:

| | |
|---|---|
| *All Errors* | The system stops when any error is detected. |
| *Disabled* | The system doesn't stop for any detected error. |
| *All, But Keyboard* | The system doesn't stop for a keyboard error. |
| *All, But Diskette* | The system doesn't stop for a disk error. |
| *All, But Disk/Key* | The system doesn't stop for either a disk or a keyboard error. |

**Base/Extended/Total Memory**
The three items show the memory status of the system. (read only)

# IPMI V1.5 BIOS Features

This setup screen appears ***only when the mBMC chip (for Server Management) is integrated on the mainboard***.


Phoenix AwardBIOS CMOS Setup Utility
Item Help
Menu Level
Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help

**PEF Configuration Status**
This option shows the current Platform Event Filter (PEF) configuration status. (Read only)

**Setting PEF Configuration**
This setting is used to set the Platform Event Filter (PEF) configuration. When [Enabled] is selected, the server will send the event signal to the BMC. Setting options: *Enabled*,*Disabled*.

**BMC Event Log**
Select [Enabled] to store POST error or initial messages to the BMC Event log. If you don't want to store POST error or initial messages to the DMI Event log, select [Disabled]. When [Cleared] is selected, the BMC event log willbe cleared at next POST stage. Setting options: *Disabled*,*Enabled*, *Cleared*.

**WatchDog TimeOut Action**
The Watch Dog Timer (WDT) is a special hardware device to monitor if the computer system works normally. If the system does not work normally, it will have some measures to fix up the system. The following actions are available on expiration of the Watchdog Timer: *No Action, Hard Reset, Power Down, Power Cycle.*

**WatchDog Timer Counter**
This feature allows users to set the time interval to reboot the computer if a timeout event occurs. Setting options: *10 Sec, 20 Sec, 30 Sec, 40 Sec.*

# Advanced BIOS Features

**Hard Disk Boot Priority**
This setting determines the boot priority of the installed hard disks.

**Hyper-Threading Technology**
The Intel processor uses Hyper-Threading technology to increase transaction rates and reduces end-user response times. The technology treats the two cores inside the processor as two logical processors that can execute instructions simultaneously. In this way, the system performance is highly improved. If you disable the function, the processor will use only one core to execute the instructions. Settings: *Enabled, Disabled.*

**NOTE**
*Enabling the functionality of Hyper-Threading Technology for your computer system requires ALL of the following platform Components:*
**CPU: An Intel® Pentium® 4 Processor with HT Technology;*
**Chipset: An Intel® Chipset that supports HT Technology;*
**BIOS: A BIOS that supports HT Technology and has it enabled; and*
**OS: An operating system that supports HT Technology.*
*For more information on Hyper-threading Technology, go to:*
*www.intel.com/info/hyperthreading*

**Quick Power On Self Test**
The option speeds up Power On Self Test (POST) after you power on the computer. When setting the item to *Enabled*, BIOS will shorten or skip some check items during POST. Settings: *Enabled, Disabled.*

**First/Second/Third Boot Device**
The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system.

**Boot Other Device**
Setting the option to *Enabled* allows the system to try to boot from other devices if the system fails to boot from the 1st/2nd/3rd boot device.

**Boot Up NumLock Status**
This setting is to set the Num Lock status when the system is powered on. Setting to *On* will turn on the Num Lock key when the system is powered on. Setting to *Off* will allow users to use the arrow keys on the numeric keypad. Setting options: *On, Off.*

**Security Option**
This specifies the type of BIOS password protection that is implemented. Settings are described below:

| Option | Description |
|---|---|
| *Setup* | The password prompt appears only when end users try to run Setup. |
| *System* | A password prompt appears every time when the computer is powered on or when end users try to run Setup. |

**APIC Mode**
This field is used to enable or disable the APIC (Advanced Programmable Interrupt Controller). Due to compliance to PC2001 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQs resources for the system. Settings: *Enabled, Disabled.*

**MPS Version Control For OS**
This field allows you to select which MPS (Multi-Processor Specification) version to be used for the operating system. You need to select the MPS

version supported by your operating system. To find out which version to use, consult the vendor of your operating system. Settings: *1.4*, *1.1*.

**Console Redirection**
*Console Redirection* operates in host systems that do not have a monitor and keyboard attached. This setting enables/disables the operation of console redirection. When set to *Enabled*, BIOS redirects and sends all contents that should be displayed on the screen to the serial COM port for display on the terminal screen. Besides, all data received from the serial port is interpreted as keystrokes from a local keyboard. Setting options: *Enabled*, *Disabled*.

**Baud Rate**
This setting specifies the transfer rate (bits per second) of *Console Redirection*. Setting options: *9600*, *19200*, *38400*, *57600*, *115200*.

**Agent Connect via**
To operate the system's console redirection, you need a terminal supporting ANSI terminal protocol and a RS-232 null modem cable connected between the host system and terminal(s). This field is a read-only field, which is used to indicate the type of device connected between the host system and terminal (s). NULL stands for a null modem.

**Agent wait time (min)**
This setting controls the timeout for terminals' (console redirection) connection to the host system. Setting options: *1*, *2*, *4*, *8* (Min).

**Agent after boot**
This setting determines whether or not to keep terminals' console redirection running after the OS has booted. Setting options: *Disabled*, *Enabled*.

**DMI Event Log**
This setting disables or enables the BIOS to log DMI (Desktop Management Interface) events. Setting options: Enabled, Disabled.

**Clear All DMI Event Log**
When this setting is set to Yes, the DMI event log will be cleared at next POST stage. Then, the BIOS will automatically set this option to No. Setting options: *Yes*, *No*.

**View DMI Event Log**
Press <Enter> to view all DMI event logs.

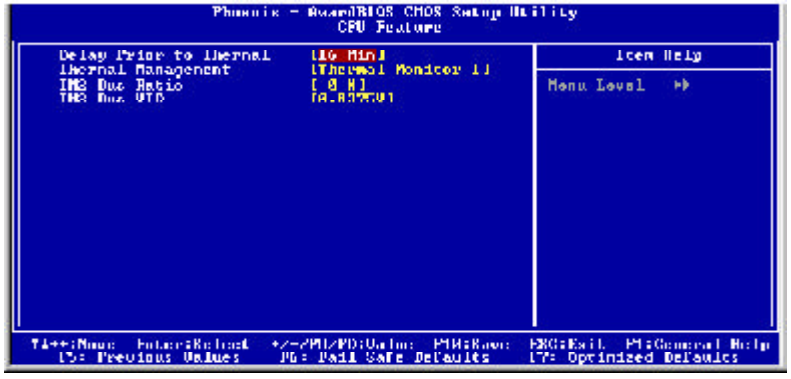
**Mark DMI Events as Read**
Press <Enter> and a screen pops up, asking users to confirm whether or not to clear all DMI event logs immediately. Press <Y> and <Enter>, the BIOS will clear all DMI event logs right away.

**Event Log Capacity**
The item allows the system to show if there is enough space for event logs.

**Event Log Validity**
The item allows the system to show if the event logs are valid.

**Care Open Warning**
The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. To clear the warning message, set the field to *Reset*. The setting of the field will automatically return to *Enabled* later. Settings: *Enabled*, *Reset*, *Disabled*.

**CPU Feature**
Press <Enter> to enter the following sub-menu screen.




**Delay Prior to Thermal**
When the CPU temperature reaches a factory preset level, a thermal monitoring mechanism will be enabled following the appropriate timing delay specified in

this field. With the thermal monitoring enabled, clock modulation controlled by the processor's internal thermal sensor is also activated to keep the processor within allowable temperature limit. Setting options: *4 Min*, *8 Min*, *16 Min*, *32 Min*.

**Thermal Management**
This feature allows you to specify the thermal monitoring system. Settings are:
*Thermal Monitoring 1 on die throttling*
*Thermal Monitoring 2 Ratio & VID transition*

**TM2 Bus Ratio (hidden for Prescott processor)**
It represents the frequency (bus ratio) of the throttled performance state that will be initiated when the on die sensor goes from not hot to hot. Key in a DEC number between 0 and 255.

**TM2 Bus VID (hidden for Prescott processor)**
It represents the voltage of the throttled performance state that will be initiated when the on die sensor goes from not hot to hot. Settings range from *0.8375V* to *1.6000V*.





# Advanced Chipset Features

Phoenix AwardBIOS CMOS Setup Utility
Advanced Chipset Features
DRAM Timing Selectable [By SPD]
CAS Latency Time [2]
Active to Precharge Delay [8]
DRAM RAS# to CAS# Delay [4]
DRAM RAS# Precharge [4]
Memory Frequency For [Auto]
DRAM Data Integrity Mode [ECC]
Floppy Disk Access Control [R/W]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

**NOTE**
*Change these settings only if you are familiar with the chipset.*

**DRAM Timing Selectable**
Selects whether DRAM timing is controlled by the SPD (Serial Presence Detect) EEPROM on the DRAM module. Setting to *By SPD* enables DRAM timing to be determined automatically by BIOS based on the configurations on the SPD. Selecting *Manual* allows users to configure these fields manually.

**CAS Latency Time**
This controls the timing delay (in clock cycles) before SDRAM starts a read command after receiving it. Settings: *2*, *2.5*, *3* (clocks). *2* (clocks) increases the system performance the most while *3* (clocks) provides the most stable performance.

**Active to Precharge Delay**
The field specifies the idle cycles before precharging an idle bank. Settings: *8*, *7*, *6*, *5* (clocks).

**DRAM RAS# to CAS# Delay**
This field allows you to set the number of cycles for a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from or refreshed. Fast speed offers faster performance while slow speed offers more stable performance. Settings: *4*, *3*, *2* (clocks).

**DRAM RAS# Precharge**
This item controls the number of cycles for Row Address Strobe (RAS) to be allowed to precharge. If insufficient time is allowed for the RAS to accumulate its charge before DRAM refresh, refresh may be incomplete and DRAM may fail to retain data. This item applies only when synchronous DRAM is installed in the system. Available settings: *4*, *3*, *2* (clocks).

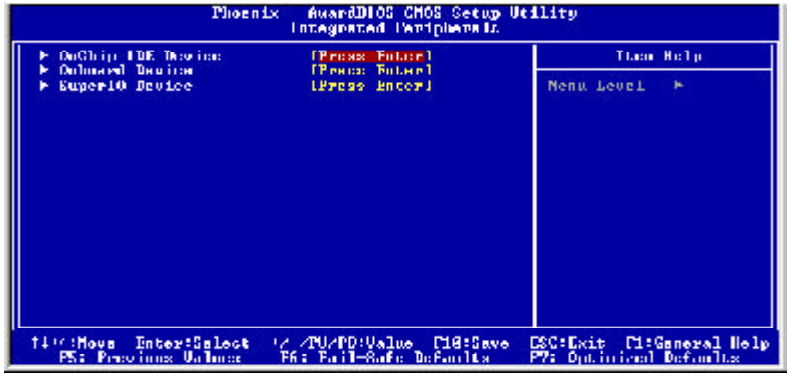
**Memory Frequency For**
Use this item to configure the clock frequency of the installed DRAMs. Options: *Auto*, *DDR 266*, *DDR333*, *DDR320*, *DDR400*.

**DRAM Data Integrity Mode**
Select *ECC* (Error-Correcting Code) or *Non-ECC* according to the type of installed DRAM.

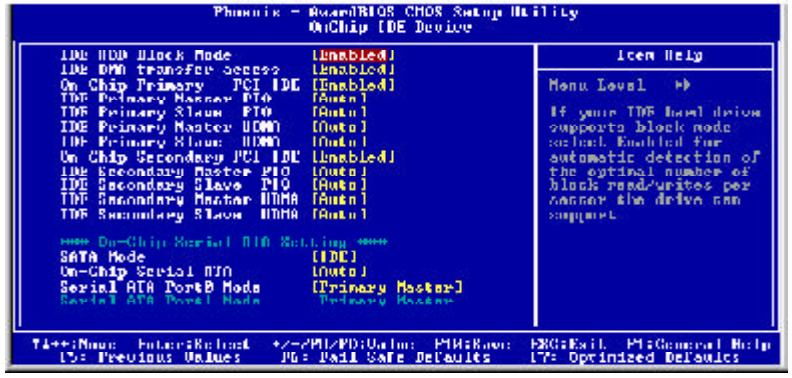
**Floppy Disk Access Control**
This enables or disables the write protection for floppy drive. Setting options: *R/W*, *Read Only*.



## Integrated Peripherals




**OnChip IDE Device**
Press <Enter> to enter the following sub-menu screen.


Phoenix - AwardBIOS CMOS Setup Utility
OnChip IDE Device
IDE HDD Block Mode [Enabled]
IDE DMA transfer access [Enabled]
On-Chip Primary PCI IDE [Enabled]
IDE Primary Master PIO [Auto]
IDE Primary Slave PIO [Auto]
IDE Primary Master UDMA [Auto]
IDE Primary Slave UDMA [Auto]
On-Chip Secondary PCI IDE [Enabled]
IDE Secondary Master PIO [Auto]
IDE Secondary Slave PIO [Auto]
IDE Secondary Master UDMA [Auto]
IDE Secondary Slave UDMA [Auto]
SATA Mode [IDE]
On-Chip Serial ATA [Auto]
Serial ATA Port0 Mode [Primary Master]
Item Help
Menu Level ▶▶
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

**IDE HDD Block Mode**
This allows your hard disk controller to use the fast block mode to transfer data to and from the hard disk drive. Block mode is also called block transfer, multiple commands or multiple sector read/write. *Enabled* enables IDE controller to use block mode; *Disabled* allows the controller to use standard mode.

**IDE DMA transfer access**
Setting to *Enabled* will open DMA bus master and execute DMA action in DOS, which will make the data transferring faster. Settings: *Disabled*, *Enabled*.

**On-Chip Primary/Secondary PCI IDE**
The integrated peripheral controller contains an IDE interface with support for two IDE channels. Choose *Enabled* to activate each channel separately.

**IDE Primary/Secondary Master/Slave PIO**
The four items allow you to set a PIO (Programmed Input/Output) mode for each of the four IDE devices that the onboard IDE interface supports. *Modes 0~4* provide increased performance. In *Auto* mode, BIOS automatically determines the best mode for each IDE device.

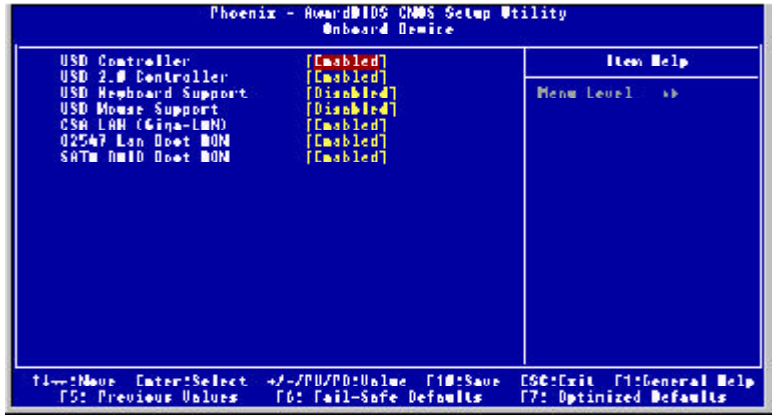
**IDE Primary/Secondary Master/Slave UDMA**
Ultra DMA implementation is possible only if your IDE device supports it and your operating environment contains a DMA driver. If both your hard drive and software support Ultra DMA 33 (or higher), select *Auto* to enable BIOS support.

****On-Chip Serial ATA Setting****

**On-Chip Serial ATA**
This setting allows you to detemine how the RAID controller on the south bridge is going to switch to SATA controller. Options: *Manual*, *Disabled* or *Auto*. When set to [Auto], BIOS will automatically swtich RAID to SATA and vice versa. If [Disabled] is selected, only SATA controller will be enabled.

**Serial ATA Port 0/1 Mode**
Select a compatible mode for Port 0 and Port 1 from Award setting to the chipset settings:
1. *Primary Master*
=> Compatible Mode with Serial ATA Port 0 set to Primary Master
2. *Primary Slave*
=> Compatible Mode with Serial ATA Port 0 set to Primary Slave
3. *Secondary Master*
=> Compatible Mode with Serial ATA Port 0 set to Secondary Master
4. *Secondary Slave*
=> Compatible Mode with Serial ATA Port 0 set to Secondary Slave
5. *Logical Primary*
=> Compatible Mode with only Serial ATA Enabled and Port 0 set to Primary Master
6. *Logical Secondary*
=> Compatible Mode with only Serial ATA Enabled and Port 0 set to Secondary Master
7. *Enhance Mode Port 0 ( Tertiary Master )*
=> Enhance Mode with Port 0 set to Native Mode Master
8. *Enhance Mode Port 1 ( Quaternary Master )*
=> Enhance Mode with Port 1 set to Native Mode Master

**Onboard Device**
Press <Enter> to enter the following sub-menu screen.


Phoenix - AwardBIOS CMOS Setup Utility
Onboard Device
USB Controller [Enabled]
USB 2.0 Controller [Enabled]
USB Keyboard Support [Disabled]
USB Mouse Support [Disabled]
CSA LAN (Giga-LAN) [Enabled]
82547 Lan Boot ROM [Enabled]
SATA RAID Boot ROM [Enabled]
Item Help
Menu Level ▸▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

**USB Controller**
Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals. Setting options: *Enabled*, *Disabled*.

**USB 2.0 Controller**
Set to *Enabled* if you need to use any USB 2.0 device in the operating system that does not support or have any USB 2.0 driver installed, such as DOS and SCO Unix. Setting options: *Disabled*, *Enabled*.

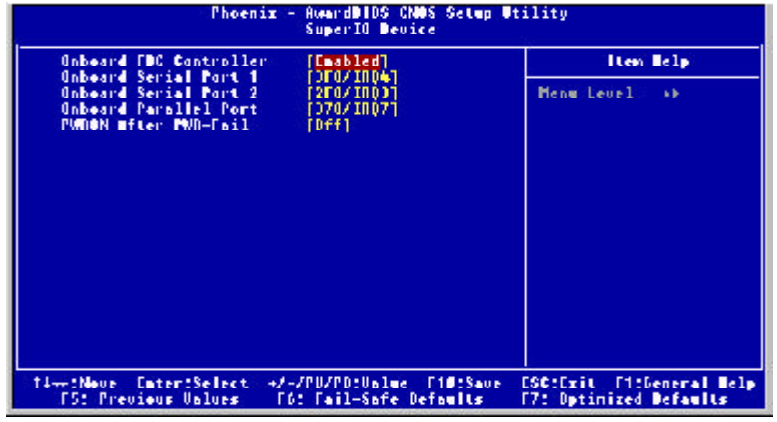
**USB Keyboard/Mouse Support**
Select *Enabled* if you need to use a keyboard/mouse in the operating system. Setting options: *Enabled*, *Disabled*.

**CSA LAN (Giga-LAN)**
The field determines whether the onboard Giga-bit LAN controller is activated. Setting options: *Enabled*, *Disabled*.

**82547 Lan Boot ROM**
This setting enables/disables the initialization of the onboard LAN Boot ROM during bootup. Selecting *Disabled* will speed up the boot process.

**SATA RAID Boot ROM**
This setting enables/disables the initialization of the onboard SATA RAID Boot ROM during bootup. Selecting *Disabled* will speed up the boot process.

**Super IO Device**
Press <Enter> to enter the following sub-menu screen.


Phoenix - AwardBIOS CMOS Setup Utility
SuperIO Device
Onboard FDC Controller [Enabled]
Onboard Serial Port 1 [3F8/IRQ4]
Onboard Serial Port 2 [2F8/IRQ3]
Onboard Parallel Port [378/IRQ7]
PWRON After PWR-Fail [Off]
Item Help
Menu Level ▸▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

**Onboard FDC Controller**
The item is used to enable or disable the onboard Floppy controller. Select *Enabled* when you have installed a floppy disk drive and want to use it.

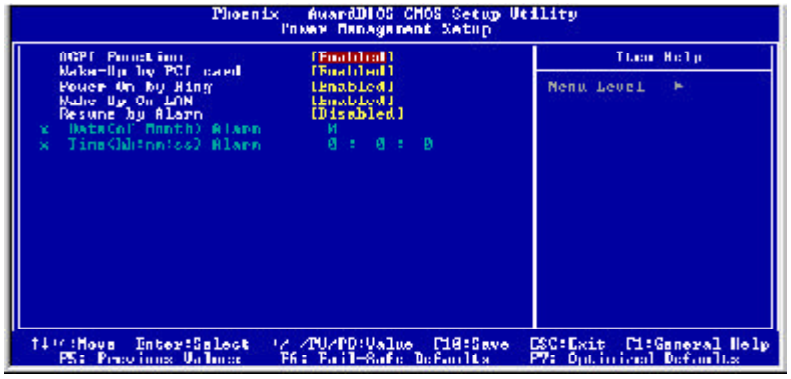
**Onboard Serial Port 1/2**
The items specify the base I/O port address and IRQ for the onboard Serial Port 1 (COM 1)/Serial Port 2 (COM 2). Selecting *Auto* allows BIOS to automatically determine the correct base I/O port address. Settings: *Disabled*, *3F8/IRQ4*, *2F8/IRQ3*, *3E8/IRQ4*, *2E8/IRQ3*, *Auto*.

**Onboard Parallel Port**
This specifies the I/O port address and IRQ of the onboard parallel port. Settings: *378/IRQ7*, *278/IRQ5*, *3BC/IRQ7*, *Disabled*.

**PWRON After PWR-Fail**
This item specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

| | |
|---|---|
| *Off* | Leaves the computer in the power off state. |
| *On* | Reboots the computer. |
| *Former-Sts* | Restores the system to the status before power failure or interrupt occurred. |

# Power Management Setup


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
ACPI Function [Enabled]
Wake-Up by PCI card [Disabled]
Power On by Ring [Enabled]
Wake Up On LAN [Enabled]
Resume by Alarm [Disabled]
x Date(of Month) Alarm 0
x Time(hh:mm:ss) Alarm 0 : 0 : 0
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

**NOTE**
*S3-related functions described in this section are available only when your BIOS supports S3 sleep mode.*

**ACPI Function**
This item is to activate the ACPI (Advanced Configuration and Power Management Interface) function. If your operating system is ACPI-aware, such as Windows 98SE/2000/ME, select *Enabled*. Setting options: *Enabled, Disabled*.

**Wake-Up by PCI Card, Power On by Ring, Wake Up On LAN**
These fields specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.

**Resume By Alarm**
The field is used to enable or disable the feature of booting up the system on a scheduled time/date.

**Date (of Month) Alarm**
The field specifies the date for *Resume by Alarm*. Settings: 0~31.

**Time (hh:mm:ss) Alarm**
The field specifies the time for *Resume by Alarm*. Format is <hour> <minute><second>.

**NOTE**
*If you have changed this setting, you must let the system boot up until it enters the operating system, before this function will work.*

# PNP/PCI Configurations

This section describes configuring the PCI bus system and PnP (Plug & Play) feature. PCI, or **P**eripheral **C**omponent **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

PnP/PCI Configurations
Reset Configuration Data [Disabled]
Resources Controlled By [Auto(ESCD)]
Item Help
Menu Level ▶
Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

**Reset Configuration Data**
Normally, you leave this field *Disabled*. Select *Enabled* to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on card and the system reconfiguration has caused such a serious conflict that the operating system cannot boot. Setting options: *Enabled*, *Disabled*.

**Resource Controlled By**
The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows® 95/98. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a "➢"). The settings are: *Auto (ESCD)*, *Manual*.

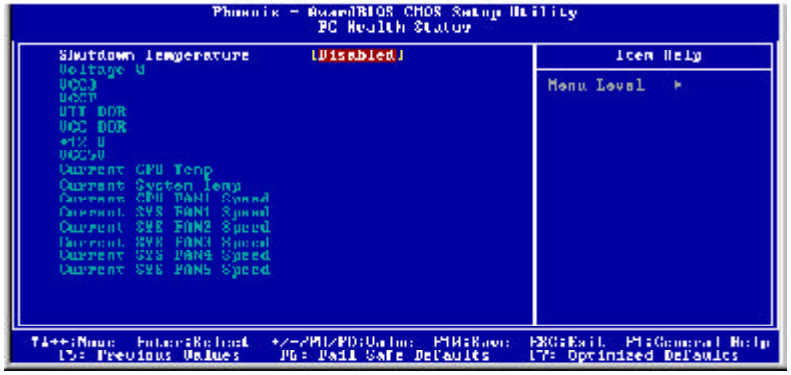
**IRQ Resources**
The items are adjustable only when *Resources Controlled By* is set to *Manual*. Press <Enter> and you will enter the sub-menu of the items. IRQ Resources list IRQ 3/4/5/7/9/10/11/12/14/15 for users to set each IRQ a type depending on the type of device using the IRQ. Settings are:

| | |
|---|---|
| *PCI Device* | For Plug & Play compatible devices designed for PCI bus architecture. |
| *Reserved* | The IRQ will be reserved for further request. |

# PC Health Status

This setup screen appears ***only when the mBMC chip (for Server Management) is not integrated on the mainboard***.

This section shows the status of your CPU, fan, overall system status, etc. Monitor function is available only if there is hardware monitoring mechanism on board.




**Shutdown Temperature**
This option is for setting the shutdown temperature level for the processor. When the processor reaches the temperature you set, the system will be shut down. Options: *Disabled*, *80°C/175°F*, *85°C/1183°F*, *90°C/191°F*.

**Voltage 0, VCC3, VCCP, VTT DDR, VCC DDR, 12V, VCC5V, Current CPU/System Temp, Current CPU FAN1 Speed, Current SYS FAN1/2/3/4/5 Speed**
These items display the current status of all of the monitored hardware devices/components such as CPU voltages, temperatures and all fans' speeds.

# Frequency/Voltage Control

Use this menu to specify your settings for frequency/voltage control.

Phoenix - AwardBIOS CMOS Setup Utility
Frequency/Voltage Control
Auto Detect PCI Clk [Enabled]
Spread Spectrum [Enabled]
Item Help
Menu Level ▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

**Auto Detect PCI Clk**
This item is used to auto detect the PCI slots. When set to *Enabled*, the system will remove (turn off) clocks from empty PCI slots to minimize the electromagnetic interference (EMI). Settings: *Enabled*, *Disabled*.

**Spread Spectrum**
When the motherboard clock generator pulses, the extreme values (spikes) of the pulses creates EMI (Electromagnetic Interference). The Spread Spectrum function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves. If you do not have any EMI problem, leave the setting at *Disabled* for optimal system stability and performance. But if you are plagued by EMI, setting to *Enabled* for EMI reduction. Remember to disable Spread Spectrum if you are overclocking because even a slight jitter can introduce a temporary boost in clockspeed which may just cause your overclocked processor to lock up.

## Load Fail-Safe/Optimized Defaults

The two options on the main menu allow users to restore all of the BIOS settings to the default Fail-Safe or Optimized values. The Optimized Defaults are the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard. The Fail-Safe Defaults are the default values set by the BIOS vendor for stable system performance.

When you select *Load Fail-Safe Defaults*, a message as below appears:

Pressing *Y* loads the BIOS default values for the most stable, minimal system performance.

When you select *Load Optimized Defaults*, a message as below appears:

Pressing *Y* loads the default factory settings for optimal system performance.

## Set Supervisor/User Password

When you select this function, a message as below will appear on the screen:

Type the password, up to six characters in length, and press <Enter>. The password typed now will replace any previously set password from CMOS memory. You will be prompted to confirm the password. Retype the password and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To clear a set password, just press <Enter> when you are prompted to enter the password. A message will show up confirming the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup without entering any password.

When a password has been set, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also have Award BIOS to request a password each time the system is booted. This would prevent unauthorized use of your computer. The setting to determine when the password prompt is required is the *Security Option* of the *ADVANCED BIOS FEATURES* menu. If the *Security Option* is set to *System*, the password is required both at boot and at entry to Setup. If set to *Setup*, password prompt only occurs when you try to enter Setup.

**NOTE**
***About Supervisor Password & User Password:***

| | |
|---|---|
| *Supervisor password:* | *Can enter and change the settings of the setup menu.* |
| *User password:* | *Can only enter but do not have the right to change the settings of the setup menu.* |